

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

March 22, 1884.—Prof. T. G. Bonney, D.Sc., F.R.S.,
President, in the Chair.

The following communications were read:—

1. “On *Rhytidosteus capensis*, Owen, a Labyrinthodont Amphibian from the Trias of the Cape of Good Hope.” By Sir Richard Owen, K.C.B., F.R.S., F.G.S.

The author first noticed the discovery of certain forms of Amphibia belonging to the genera *Labyrinthodon*, *Brachyops*, *Petrophryne*, and *Rhinosaurus*, and called attention to certain typical peculiarities in the structure of the teeth, the form of the bony palate, and the double occipital condyle.

An imperfect cranium of the species now described as *Rhytidosteus capensis* was procured by Heer Swanepoel from the Trias on his farm of Beersheba, in the Orange Free State, and deposited by him in the Bloemfontein Museum.

This specimen, which was brought to England and submitted to the author by Dr. Exton, consists of the anterior portion of the skull with part of the mandible attached. The general form is batrachoid, and one of the hinder palato-vomerine teeth, on being examined microscopically, exhibited the characteristic labyrinthodont structure.

The surface of the skull, and the characters of the premaxillary, nasal, frontal, and prefrontal bones were described. The parietals and postfrontals are imperfect, the hinder part being lost. The rami of the mandible are also imperfect behind, but a broken fragment shows the articular surface. The vomerine bones were also described, with the posterior nostril and the teeth before and behind this opening. The breadth of the bony palate at its hinder fractured border is 5 inches; the length of the part preserved $4\frac{1}{2}$ inches; the mandible, when perfect, was probably from 11 inches to a foot in length. The author also gave an account of the dentition wielded by the premaxillary, maxillary, vomerine, palatine, and mandibular bones.

The author pointed out that the type of air-breathing vertebrates to which the present genus belongs reached its highest development in the Triassic period in Britain, Russia, North America, Hindostan, and South Africa. The only known antecedent form from which the labyrinthodont structure of tooth might have been derived is a genus of fishes named *Dendrodus*, in the Old Red Sandstone. The Liassic Ichthyosaurs also show some similarity in tooth-structure; but in them there is far greater simplicity.

2. "On the Occurrence of Antelope-remains in Newer Pliocene Beds in Britain, with the Description of a new Species, *Gazella anglica*." By E. Tully Newton, Esq., F.G.S.

Part of the skull and horn-core of a small cavicorn Ruminant, which had been obtained by Mr. H. B. Woodward from the Norwich Crag of Thorpe, was described, the chief points noticed being the almost erect position of the horn-core upon the frontal bone, its oval section and enlargement just above the pedicle, the presence of a deep pit on the outer side of the pedicle, and of a well-marked frontal fossa, from which a large foramen passed directly into the orbit. The frontal suture being well preserved, the precise direction of the horn-cores could be ascertained.

The presence of a frontal fossa with a foramen passing directly into the orbit, was held to indicate an affinity with the Antelopes; and after comparison with the available recent specimens in the British Museum and Royal College of Surgeons, it was regarded as most near to the Gazelles,—*Gazella dorcas*, *G. subgutturosa*, *G. picticauda*, and *G. Bennettii* being most like the fossil, and agreeing with it in having the skulls more or less compressed in the frontal region, nearly upright horns, and a well-marked frontal fossa and foramen, but differing in the form of the fossa and in the position of the pit on the pedicle. On the whole *G. Bennettii* was regarded as nearest to the fossil.

The perfect condition of the frontal bone allowed a cast of the interior to be taken, which reproduced the form of the frontal lobe of the brain, and it became possible therefore to compare this part of the fossil with the brains of recent forms, which was then done, special reference being made to the casts taken from *Gazella picticauda* and *G. Bennettii*. In the form of the convolutions of the frontal lobe, *G. Bennettii* was again found to be the most like the fossil.

Among the known fossil forms only a few were thought sufficiently near to render a comparison with them necessary; the following, however, were mentioned, and attention called to the points in which they differed from the Norwich specimen, namely *Antelope deperdita*, *A. brevicornis*, *A. porrecticornis*, *Tragoceros Valenciennesi*, and *Palæoryx parvidens*. Seeing that all the important characters of this fossil are found among the recent Gazelles, it is referred to that genus; but as it differs in certain points from each of them, it is necessary to give it a new specific name; the author therefore called it *Gazella anglica*.

Fortunately this interesting discovery is corroborated by two other similar examples of horn-cores with frontals from the same locality and horizon. One of them is in the British Museum, and the other in the possession of Dr. Arthur King, of Norwich.

A short appendix, by Mr. H. B. Woodward, on the horizon from which these fossil Gazelles were obtained was also read.

3. "A Comparative and Critical Revision of the Madreporaria of the White Lias of the Middle and Western Counties of England, and of those of the Conglomerate at the Base of the South-Wales Lias." By Robert F. Tomes, Esq., F.G.S.

After referring to previous memoirs on the subject by MM. Tawney, C. Moore, Tate, and Bristow, and to the conflicting conclusions arrived at by those geologists, the author insisted that the Madreporaria are not necessarily contemporaneous with the beds in which they are found imbedded. He took exception to some of the identifications of these forms by Dr. Duncan, and suggested that their nearest analogues are to be found in the St. Cassian beds.

The few and imperfect corals of the White Lias of Warwickshire, the author believes to have resemblances with the coral fauna of the Sutton Stone on the one hand, and the St. Cassian beds on the other. The Mollusca found in the same beds, however, are those of the zone of *Ammonites angulatus*.

While the Brocastle Conglomerate is, according to the author, a local deposit with uncertain relations, the Sutton Stone is a much more regular stratum, and is quite distinct from the conglomerate which immediately overlies it, and which is seen at Southerndown. He regarded the Sutton Stone as the equivalent of the White Lias, and of Rhætic, not Liassic age.

The revised list of corals found in the St. Cassian beds, the White Lias, the Sutton Stone, and the Brocastle Conglomerate respectively, shows, according to the author, that nearly all the White-Lias forms occur at St. Cassian; that a certain number of the corals of those two formations occur also in the Sutton Stone, but that none of them occur at Brocastle; and, furthermore, that the coral faunas of Sutton are quite distinct.

In conclusion, the author contested the views of the late Mr. C. Moore concerning the existence of a series of conglomerates below the base of the Sutton Stone, and insisted that the presence of a Hettangian molluscan fauna in these beds and the White Lias is not sufficient to counterbalance the evidence of Rhætic affinities afforded by the corals. The Brocastle Conglomerate, however, contains corals with Liassic affinities.

Detailed descriptions of the new species of corals formed the conclusion of the paper.

April 2, 1884.—Prof. T. G. Bonney, D.Sc., F.R.S.,
President, in the Chair.

The following communication was read:—

"On a new specimen of *Megalichthys* from the Yorkshire Coal-field." By Prof. L. C. Miall, F.G.S.

A large and unusually complete example of this fish was recently found in the roof of the Halifax Hard bed, at Mr. S. B. Ellison's Firebrick works, Idle, near Leeds. The fossil is in good preserva-

tion, the ventral surface is uppermost, the pectoral, ventral, anal, caudal fins can be more or less satisfactorily made out; the dorsal surface is absent. The length is 3 feet $8\frac{1}{2}$ inches, of which the head measures about 10 inches, and the tail (from the end of which 5 or 6 inches may be wanting) about a foot. Judging by the large skull figured by Agassiz and preserved in the Leeds Museum, *Megalichthys* may have attained a length of from 4 to 5 feet.

The skull shows the mandible and mandibular teeth, the end of the snout, the opercula, and the jugular plates. The pectoral fins show the obtuse lobate character, previously suspected by Huxley to obtain in this genus. Large basal scales lie on each side of each pectoral fin.

The ventral fins are abdominal. The right, which is best preserved, exhibits the arrangement of the scales which is described, and which gives a clue to the disposition of the underlying bones or cartilages. This must have closely resembled that in some Elasmobranchs. The same type of fin may be traced, though with important modifications, in *Polypterus*, *Polyodon*, and *Acipenser*, whilst in other recent Ganoids and in Teleostei the arrangement is widely different.

Between the ventral fins are three large scales, one median and two lateral. On the left side of the median scale lies what appears to be the anus. A similar arrangement seems to occur in *Pterichthys*. This region is rarely exposed in fossils.

The anal fin has also its pair of large basal scales. The caudal fin cannot be well made out. There are indications of the underlying skeleton, but nothing can be distinctly made out.

All the features of the present fossil confirm the opinion long ago expressed by Pander and Huxley as to the near affinity of *Megalichthys* to *Osteolepis* and *Diplopterus*.

BIBLIOGRAPHICAL NOTICE.

Geological and Natural-History Survey of Canada: Catalogue of Canadian Plants.—Part I. *Polypetalæ*. By JOHN MACOUN, M.A., F.L.S., F.R.S.C. Montreal, 1883.

MOST of our colonial governments have recognized in an enlightened manner the great importance, even from a merely commercial stand-point, of a complete stock-taking of their natural productions. Mineral wealth has no doubt generally been looked to first; and the necessity for the conservation of forests and of animals yielding food and clothing has not always been recognized so readily as the immediate profit to be obtained from them; but the value of the knowledge of what plants and animals the country contains has led to the frequent conjunction of Natural History departments with State Geological Surveys. This healthy sign of wise counsels is seen in the work before us—the first part of a catalogue of Canadian